

USE OF MULTIPLE RETICLES IN LITHOGRAPHIC PRINTING TOOLS

ABSTRACT OF DISCLOSURE

A reticle stage having a range of motion sufficient to scan at least two distinct reticles. In a photolithographic process, a reticle stage having an extended range of motion and containing at least two reticles, preferably a phase shift reticle and a trim reticle, is used. The reticle stage scans the two reticles across an illumination field. The image of each reticle is projected by projection optics onto a photosensitive substrate on a wafer stage. The field on the photosensitive substrate is exposed with the image of the first reticle and subsequently exposed with the image of the second reticle. The projection of an image of a first and second reticle onto the same field in a scanning operation greatly facilitates throughput of the photolithographic tool or device. Reticle changes are eliminated when at least two reticles are needed to expose a single field. The use of multiple reticles to expose a single field is necessary when a phase shift mask and related trim mask are used. In another embodiment, the reticle stage has a range of motion permitting scanning of an additional calibration reticle. This permits rapid real time system calibration.

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